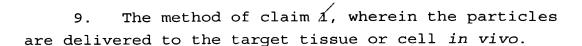


We claim:

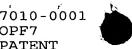
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- 1. A method for delivering particles which comprise a nucleic acid molecule to a target tissue or cell, wherein said particles do not include a biolistic core carrier, said method comprising administering said particles to the target tissue or cell by needleless syringe.
- 10 2. The method of claim 1, wherein the particles have an average size that is equal to or larger than the size of the target cell.
- 3. The method of claim 2, wherein the particles have an average size predominantly in the range of about 10 to 250 μm .
 - 4. The method of claim 1, wherein the particles are administered to the target tissue or cell at a momentum density of between 2 and 10 kg/sec/m.
 - 5. The method of claim 1, wherein the particles are delivered to a cell in epidermal tissue.
- 25 6. The method of claim 1, wherein the particles are delivered to a cell in the stratum basal layer of skin tissue.
- 7. The method of claim 1, wherein the particles are comprised of a nucleic acid molecule and a pharmaceutically acceptable excipient.
 - 8. The method of claim 7, wherein the excipient comprises trehalose.

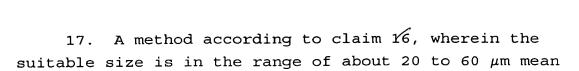




- 10. The method of claim 1, wherein the particles are delivered to the target tissue or cell ex vivo.
 - 11. The method of claim 1/, wherein the nucleic acid molecule comprises a gene encoding a protein that is defective or missing from the target cell genome.
- 12. The method of claim 1, wherein the nucleic acid molecule comprises a nucleotide sequence encoding an immunogen.
- 13. A particulate nucleic acid composition suitable for administration to a target tissue or cell by needleless syringe, wherein said composition does not include a biolistic core carrier.
- 20 14. The particulate nucleic acid composition of claim 13/, wherein the composition is entrained within a supersonic gas flow.
- particulate pharmaceutical preparation, comprising compacting the preparation to provide a compacted pharmaceutical preparation and size-reducing the compacted preparation into densified particles of suitable size and density for transdermal delivery thereof by needleless injection.
 - 16. A method according to claim 15, wherein the suitable size is in the range of about 0.1 to 150 μm mean diameter.



diameter.

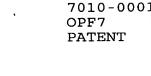


- 18. A method according to claim 15, wherein the densified particles have a particle density in the range of about 0.5 to 3.0 g/cm³.
- 19. A method according to claim 18, wherein the 10 particle density is in the range of about 0.8 to 1.5 g/cm³.
 - 20. A method according to claim 15, wherein the particulate pharmaceutical preparation is a lyophilized or spray-dried composition.
 - 21. A method according to claim 15, wherein compacting is carried out in a press at about 1,000 to 24,000 pounds per square inch.
 - 22. A method according to claim 21, wherein compacting is carried out under vacuum.
- 23. A method according to claim 15, wherein compacting is carried out without heating or shear.
- reducing of the compacted material is carried out by milling and/or sieving.
 - 25. A method according to claim 15, wherein the method further comprises selecting densified particles using size classification.

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- A method according to claim 25, wherein the size classification of the densified particles is carried out using sieving or cyclone separation.
- A method according to claim 15, wherein the 5 particulate pharmaceutical preparation is a preparation of a peptide or protein.
- A method according to claim 15, wherein the particulate pharmaceutical preparation is a preparation 10 of a gene construct.
- 29. A densified particulate pharmaceutical composition formed from a lyophilized or spray-dried pharmaceutical preparation, said densified composition having an average particle size in the range of about 0.1 to 250 μ m mean diameter and a particle density in the range of 0.1 to $25/g/cm^3$.
- A composition according to claim 29, wherein 20 the lyophilized or spray-dried pharmaceutical preparation is a heat-sensitive biopharmaceutical preparation.
- A composition according to claim 29, wherein the lyophilized or spray-dried pharmaceutical preparation 25 is a preparation of a peptide or protein.
- A composition according to claim 29, wherein the particulate pharmaceutical preparation is a preparation of a gene construct. 30
 - A composition according to claim 29, wherein the particle size is in the range of about 0.1 to 150 μm mean diameter.





- 34. A composition according to claim 33, wherein the particle size is in the range of about 20 to 60 μm mean diameter.
- 35. A composition according to claim 29, wherein the particle density is in the range of about 0.5 to 3.0 g/cm^3 .
- 36. A composition according to claim 35, wherein the particle density is in the range of about 0.8 to 1.5 g/cm³.
 - 37. A compacted particulate pharmaceutical composition formed from a porous pharmaceutical preparation, said compacted composition having an average particle size in the range of 0.1 to 250 μm mean diameter and a particle density in the range of 0.1 to 25 g/cm³.
- 38. Particles of a suitable size and density for transdermal delivery by needleless injection, consisting of a gene construct and a pharmaceutically acceptable excipient.
- 39. A unit-dosage container for a needleless
 25 syringe comprising a compacted particulate pharmaceutical preparation according to claim 31.

pharmaceutical agent to a vertebrate subject, said method comprising providing a compacted particulate pharmaceutical preparation according to claim 40 and delivering the preparation to a target tissue or cell of the vertebrate subject by needleless syringe.